International Journal of All Research Education and Scientific Methods (IJARESM),
ISSN: 2455-6211, Volume 13, Issue 5, May-2025, Available online at: www.ijaresm.com

Development and Evaluation of a Ghee- Based Herbal Moisturizing Cream

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ABSTRACT

Ayurvedic medicine is commonly used across India, especially in tribal and remote areas where modern medical facilities are hard to reach. Even though it doesn't have the complex setup of modern healthcare, it still plays an important role in treating many people. Shatdhautaghrita is a traditional Ayurvedic product made by washing cow ghee (clarified butter) 100 times with water. This process changes the ghee into a smooth, soft, cool, and nourishing cream. It can be used on the skin to reduce wrinkles, act as an antioxidant, and keep the skin moisturized. Shatdhautaghrita (SDG), a handmade skin ointment, is especially helpful for healing damaged skin. This review mainly talks about how SDG is made, how it works, its market value, why it is needed, and its benefits. It says that SDG might be good for treating skin problems, but it should be tested using modern scientific methods. If we mix SDG with herbal medicines or plant-based ingredients, it becomes a very good base for making herbal skin creams.

Keywords : SDG, Ayurveda, Cow ghee, Moisturizing Cream, Ayurvedic Formulation, Skin Hydration, Natural Base

INTRODUCTION

In recent years, the use of organic fertilizers has gained significant attention due to their numerous benefits in enhancing soil quality and boosting agricultural productivity. Organic fertilizers are not only more effective and environmentally friendly, but they also offer a sustainable solution for managing waste. They are rich in essential nutrients and have a lower carbon-to-nitrogen (C/N) ratio, making them more efficient for plant growth.

Before the rise of modern allopathic medicine, traditional medicine systems were solely responsible for healthcare around the world. Allopathic medicine quickly became widely accepted because it applied modern scientific knowledge in biology and chemistry for both research and treatment. Today, it holds a central role in the medical field. However, traditional medicine continues to play a vital role in global healthcare, offering valuable contributions alongside modern practices.

The use of single-compound molecules in allopathic medicine can sometimes lead to adverse side effects. In contrast, **Panchagavya**—a formulation consisting of five cow-derived products (milk, curd, ghee, urine, and dung) as described in Ayurveda—plays a significant role in the treatment of various diseases. The components of Panchagavya are illustrated in **Figure 1** [1, 2].

Figure 1. Component of Panchagavaya

India is a country deeply rooted in traditions that often reflect a strong connection between social customs and their scientific relevance. The cow holds a sacred place in Indian culture and is revered as **'Gaumata'** or **'Kamadhenu'** due to its nurturing qualities, akin to those of a mother [3]. *Kamadhenu* is regarded as a divine cow believed to fulfill one's wishes.**Panchagavya** is considered a valuable resource for both health and medicine. In Ayurveda, the therapeutic significance of five cow-derived products—milk, ghee, urine, dung, and curd—collectively referred to as **'gavya'** (derived from *'Gau'*, meaning cow), has been extensively described for the treatment of various ailments. Each of these components possesses distinct properties and applications across human health, agriculture, and related fields.The term **'Panchagavya'** is derived from two Sanskrit words: *'Panch'* meaning five, and *'gavya'* meaning substances obtained from the cow [4].

Panchagavya therapy is advised for the management of numerous health conditions, including asthma, influenza, allergies, cardiovascular disorders, kidney diseases, rheumatoid arthritis, wound healing, leucorrhoea, hepatitis, nutritional and gastrointestinal disorders, obesity, tuberculosis, ulcers, chemical toxicity, and various bacterial, fungal, and viral infections [3, 4]. Additionally, this therapy has shown promising therapeutic effects in combating serious pathological conditions such as cancer, AIDS, and diabetes [2, 4, 5].

Shata-dhauta-ghrita (SDG) refers to cow ghee that has been washed **100 times** with water (*shata* meaning one hundred, *dhauta* meaning washed). Traditional texts describe it as an effective remedy for burns, chicken pox, scars, wounds, herpes, leprosy, and other skin ailments. It is also used as a base for topical drugs [8]. The physicochemical properties of this Ayurvedic preparation were analyzed in a study, examining the changes that occur during the washing process. The study aimed to understand the rationale behind washing cow ghee **100 times with water**.

After washing, **Shata-dhauta-ghrita** loses the characteristic odor and granular, oily consistency of regular ghee, becoming a smooth, homogeneous, and non-oily product that is easier to apply, thus enhancing patient compliance. Unlike ghee, which has an acidic pH, **Shata-dhauta-ghrita** has a neutral pH, making it gentler on the skin and reducing the risk of irritation. Due to its smaller particle size, the product is non-granular, non-sticky, and homogeneous, facilitating easier application and potentially improving absorption through the skin. The washing process results in a stable **oil-in-water emulsion** with enhanced consistency and viscosity, making it ideal for topical use Before the rise of the allopathic medical system, traditional healing practices were fundamental to global healthcare. These time-honored systems, developed over generations, played a crucial role in maintaining the health of populations worldwide [9]. Today, modern medicine offers a variety of cream bases for topical formulations, with ingredients like beeswax, stearic acid, and liquid paraffin, which serve as inert substances without therapeutic effects. In contrast, **cow ghee**, a key component in Ayurvedic medicine, is known for its medicinal properties.

As detailed in **Caraka**, cow ghee provides numerous health benefits, including improving cognitive functions, enhancing digestion (agni), increasing vitality (ojas), and balancing the bioenergies **Kapha**, **Vata**, and **Pitta**. It is also believed to alleviate conditions such as poisoning, mental disturbances (insanity), tuberculosis, and fever. Described as the most superior of fats, cow ghee is considered cold in nature with a **sweet taste** (**madhura rasa**) and **sweet post- digestive effect** (**madhura vipaka**), possessing the potential to deliver a range of therapeutic actions when used correctly [10]. When used as a base for cream formulations, ghee enhances the effectiveness of active ingredients through its synergistic properties.

Several Ayurvedic preparations utilize ghee for therapeutic purposes. **Bramhi ghrita**, a polyherbal formulation, is recommended for treating psychological conditions such as **Unmad** (insanity), **Apasmara** (epilepsy), and **Graharogas** (idiopathic mental disorders) [11]. Both **Hingusauvarchaladi Ghrita** and **Saptarvartita Hingusauvarchaladi Ghrita** have demonstrated anticonvulsant effects [12]. **Manjishthadi Ghrita** is commonly used as a local treatment for wounds, while **Darvhi Ghrita** promotes healing for various skin injuries [12, 13]. **Jatyadi Ghrita** is known for its anti-inflammatory properties [14], and **Unmadnashak Ghrita** exhibits sedative and anticonvulsant effects [15].

Shata-dhauta-ghrita (SDG), a form of cow ghee that has been washed 100 times with water, is used in Ayurveda for treating burns, chickenpox, leprosy, wounds, and other skin conditions, as well as a carrier for external medicines [53, 55]. Studies have compared the physicochemical properties of both **cow ghee** and **SDG** with those of modern cream bases, and this paper seeks to explore the reasoning behind the traditional practice of washing cow ghee 100 times with water [17]. In India, clarified butter is known as **Ghrita**. It is the primary cooking oil used across various regional cuisines in the country. In addition to its culinary use, Ghrita holds medicinal value and is an essential component in several Hindu religious rituals. Due to these diverse applications, Ghrita has been highly esteemed for centuries. The term **Ghrita** is most commonly associated with **Goghrita** (cow ghee), which say Ghrita, we mostly mean Goghrita (cow ghee).

Figure 2: **Action of Herbal Moisturising Cream on Skin**

Pharamcological Action : ghrita (ghee) contains **ketone bodies** that help protect the body from damage caused by harmful molecules (oxidative stress). It also has **Vitamin A**, which keeps the eyes moist, protects the skin and tissues of the body, and helps prevent blindness. **Essential fatty acids** in Ghrita support the healthy growth of the body.Ghrita melts at around **35°C**, which is warmer than normal body temperature. It is very easy to digest, with a **digestibility rate of 96%**, meaning the body can absorb and use most of it. When herbs or medicines are mixed with Ghrita, their active ingredients are also better absorbed and digested.Ghrita is **lipophilic**, which means it mixes well with fats. This helps it carry the medicine to the right part of the body, especially inside cells, because cell membranes are made of fat. Ghrita also helps deliver the medicine deep into parts of the cell like the **mitochondria**, **microsomes**, and **nucleus** more easily.

Benefits of Shatdhaut Ghrita in Moisturizing Creams :[36]

Deep Hydration and Moisturization:
Ayurvedic References: Classical Ayurvedic texts like *Charaka Samhita* and *Sushruta Samhita* describe ghee (clarified butter) as essential for skin health due to its moisturizing and rejuvenating properties, nourishing and hydrating tissues when applied externally.

Scientific Insight: Ghee contains short-chain and medium-chain fatty acids that effectively penetrate the skin barrier, hydrate dry and cracked skin, form a protective layer, reduce water loss, and improve moisture retention.

Nourishing and Rejuvenating Skin:

- **Ayurvedic References**: Ancient texts like *Ashtanga Hridaya* mention that ghee is deeply nourishing for both internal and external tissues. The cleansing process used in making **Shatdhaut Ghrita** makes it lighter and purer, enhancing its ability to nourish the skin without causing heaviness.
- **Scientific Insight**: Research shows that ghee contains fat-soluble vitamins A, D, E, and K, which are essential for skin regeneration and cell repair. These vitamins support **collagen production**, aiding in skin elasticity and providing **anti-aging benefits**.

Soothing and Calming Effect:

- **Ayurvedic References**: According to Ayurvedic principles, ghee calms the **Pitta dosha**, which governs heat, irritation, and inflammation. When applied externally, **Shatdhaut Ghrita** cools and soothes inflamed or sensitive skin.
- **Scientific Insight**: Studies indicate that the fatty acids in ghee, especially **butyrate**, have

anti- inflammatory properties, helping to reduce skin inflammation and irritation.

Improving Skin Texture and Tone:

- Ayurvedic References: In Ayurveda, ghee is considered a rasayana (rejuvenative) that helps improve the quality

of skin by promoting softness and smoothness. The Sushruta Samhita recommends ghee for enhancing skin texture and treating roughness and dryness.

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Scientific Insight: Ghee's lipid composition, which includes saturated fatty acids and antioxidants, helps improve skin's barrier function. Studies have also shown that ghee can provide a smoothing effect by softening keratin, the protein that makes the skin rough.

Healing and Repairing Damaged Skin:

- Ayurvedic References: Ghee's use in wound healing is well-documented in Ayurveda. Charaka Samhita mentions ghee as a healing agent for burns, cuts, and scars, promoting faster tissue regeneration and minimizing scar formation.
- Scientific Insight: Ghee is rich in butyrate, which has been shown to aid tissue repair and regeneration. It is believed that butyrate reduces oxidative stress and promotes the healing of skin cells.

Antibacterial and Antioxidant Properties :[37]

Ayurvedic References: The antibacterial and antioxidant properties of Shatdhaut Ghrita are recognized in Ayurvedic texts. Ghee is often included in Ayurvedic formulations for treating infections, preventing skin disorders, and maintaining skin health.

Scientific Insight: Modern studies show that ghee possesses both antioxidant and antimicrobial properties. The presence of vitamin E (especially alpha-tocopherol) in ghee makes it effective in protecting the skin from free radicals and environmental stressors. Furthermore, its antimicrobial effects are beneficial for preventing acne and other bacterial skin infections.

Suitable for All Skin Types:[38]

Ayurvedic References: In Ayurveda, ghee is considered to have a balancing effect on all three doshas (Vata, Pitta, and Kapha). Shatdhaut Ghrita is specifically processed to be less heavy and more balanced for various skin types, including oily and sensitive skin.

Scientific Insight: Research has shown that despite being an oil-based product, ghee does not clog pores, making it suitable for oily skin. It is also non-irritating and safe for sensitive skin due to its hypoallergenic nature.

Antioxidant and Anti-aging Effects:[39]

Ayurvedic References: The use of ghee for its anti-aging and anti-wrinkle effects is well- established in Ayurvedic beauty treatments. According to the Charaka Samhita, ghee helps to maintain youthful skin and prevents wrinkles and sagging.

Scientific Insight: Ghee's antioxidants, such as vitamin E, help combat oxidative stress, a leading factor in the development of wrinkles and fine lines. Studies on natural oils show that antioxidants play a key role in reducing signs of aging by protecting against UV damage and pollution.

Ayurvedic References

In Ayurveda, Shatdhaut Ghrita is considered to impart a natural glow to the skin. It nourishes the skin deeply and balances the bodily humors, leading to a radiant complexion.

Scientific Insight: The presence of fatty acids and fat-soluble vitamins in Shatdhaut Ghrita aids in improving the skin's natural radiance by deeply moisturizing and providing essential nutrients to the skin cells. These compounds contribute to a healthy, glowing appearance by reducing skin dullness and dryness.

Natural Composition and Safety:

Ayurvedic References: Shatdhaut Ghrita is considered a safe and gentle ingredient in Ayurvedic formulations. Its purifying process ensures that it is free of impurities and toxins, making it suitable for sensitive skin.

Scientific Insight: Modern research supports the use of natural, non-toxic skincare ingredients like ghee, especially for those with sensitive skin or conditions like eczema and dermatitis. Shatdhaut Ghrita, being a natural substance, is less likely to cause irritation or allergic reactions compared to synthetic chemicals found in many skincare products.

METHOD OF PREPARATION

Preparation of ShataDhautaGhrita (Base)
Ingredients:

- 50 gm **cow ghee**
- Cool filtered water (as required, changed every 10 washes)

Procedure:

1. Place 50 gm of pure cow ghee in a wide-mouth bowl.
2. Add cool filtered water in equal quantity.
3. Mix vigorously for a few minutes using a clean spoon or spatula.
4. Allow the mixture to settle and pour off the water.
5. Repeat the process **100 times**, changing water after every 10 washes.
6. Once creamy, odorless, and light, store in a sterilized airtight container in the refrigerator overnight.

Figure 3.Preparation Of Shata Dhauta Grita (Base)

3.2 Mechanism of this preparation : Clarified butter (Goghrita) was placed in a shallow vessel, and water was added to it. The mixture was kneaded for 2–3 minutes, then allowed to settle before the water was drained off. This process was repeated 100 times to obtain Shatadhauta Ghrita (SDG).

During this procedure, the ghee is continuously mixed with water, forming an initial **water-in-oil (w/o)** emulsion, where water droplets are dispersed within the fat. With repeated agitation, the size of fat particles gradually reduces, resulting in a smooth, non- granular texture. Over time, the emulsion may transition into an **oil-in-water (o/w)** type or even form a **complex w/o/w (water-in-oil-in-water)** emulsion.

This complex structure may be due to the water droplets passing into fat layers, causing the ghee to swell. Additionally, repeated washing may extract pigments from the ghee into the water, altering its color.

Chemically, the presence of water promotes the breakdown of triglycerides into glycerol, a process known as fat splitting. This transformation results in the ghee becoming a soft, cream-like substance. Figures 4. illustrate the mechanism [20]

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ISSN: 2455-6211, Volume 13, Issue 5, May-2025, Available online at: www.ijaresm.com

Shatadhauta ghrita preparation
Take marketed copper vessel
Add Sufficient Amount of ghrit /ghee/ Clarified butter on the copper and water.
Ghrita was triturated along with water
This procedure was repeated for 100 times.
After repeating the procedure for 100 times Shatadhauta Ghrita cream was obtained.

Figure 4. Preparation Method Of Shatadhauta Ghrita

4.Preparation of Moisturising cream :

Ingredients	Quantity (gm)	Function
ShataDhautaGhrita	25	Natural emollient base
Aloe vera gel	15	Moisturizer, hydrator
Turmeric powder	0.2	Anti-inflammatory, brightening
Vitamin E oil (capsules or pure)	3	Antioxidant, skin protector
Rose water	5	Hydrating, soothing
Lemon essential oil	2	Antibacterial, fragrance, brightening

Procedure:

1. Gently warm 25 grams of ShataDhautaGhrita using a hot water bath. It should be just soft, not hot.
2. In a separate clean bowl, mix 15 grams of aloe vera gel with 0.2 grams of turmeric powder until well combined.
3. Slowly add the aloe vera and turmeric mixture into the warm ghee while stirring continuously to make a smooth blend.
4. Add 3 grams of Vitamin E oil to the mixture and stir well.
5. Slowly add 5 grams of rose water, a little at a time, while stirring to help the cream form properly.
6. Add 2 drops of lemon oil and mix until everything is evenly blended.
7. Let the cream cool down to room temperature.
8. Transfer the cream into a clean, airtight glass jar.
9. Store the cream in a cool, dry place or in the refrigerator. Use within one month for best results.[17,18,19]

Fig no : 05 Formualtion of Moisturizing Cream

Evaluation test :

The formulated moisturizing cream was evaluated on the various parameters such as foll

Physical evaluation: {21}
colour Odour texture

pH Determination : Using a calibrated pH meter, dissolve 0.5 g of the cream in 50.0 ml distilled water and measure the pH.[22]

Viscosity:
Determine using a Brookfield Viscometer at 100 rpm with spindle no. 4.[23]

Spreadability test:
Sample was applied between two glass slides and was compressed to uniform thickness by placing 100gm weight for 5minutes. Weight was added to the pan. The time required to separate the two slides, i.e. the time in which the upper glass slide moved over the lower slide was taken as measure of spreadability. Spreadability =m*l/t

m = Weight tide to upper slide
l = length moved on the glass slide t = time tak [24]

Homogeneity
The formulations were tested for the homogeneity by visual appearance and by touch.[25]

Removal
The ease of removal of the cream applied was examined by washing the applied part with tap water.[26]

Bleeding test
Bleeding test is mainly carried out for semisolid preparation. In these the formulation are place in fridge for up to the 10 min after 10 min these formulation remove from fridge and place at room temperature for 10 min. Then observe the formulation. In this test we can check the formulation is omit out the liquid or not, after testing we conclude that formulation is stable or not stable for climatic condition.[27]

Irritancy test
Mark area on the left hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported.[25,28]

Stability testing
Accelerated stability testing of prepared formulation was conducted at room temperature, studied for 7 days. And then the formulation studied at 40ºC ± 1ºC for 30 days. The formulations was kept both at room and elevated temperature and observed on initial day, 15th day and 30th day for the all Evaluation parameters.[29,30]

Spreadability test:
Sample was applied between two glass slides and was compressed to uniform thickness by placing 100gm weight for 5minutes. Weight was added to the pan. The time required to separate

the two slides, i.e. the time in which the upper glass slide moved over the lower slide was taken as measure of spreadability.
Spreadability =m*l/t
m = Weight tide to upper slide
l = length moved on the glass slide t = time taken. [31,24]

Microbial growth test
The formulated cream was inoculated on the plates of Muller Hinton agar media by streak plate method and a control was prepared by omitting the cream. The plates were placed in to the incubator and are incubated at 37ºC for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control. [32,33]

Bleeding test
Bleeding test is mainly carried out for semisolid preparation. In these the formulation are place in fridge for up to the 10 min after 10 min these formulation remove from fridge and place at room temperature for 10 min. Then observe the formulation. In this test we can check the formulation is omit out the liquid or not, after testing we conclude that formulation is stable or not stable for climatic condition. [27.,25]

Sensitivity Test:
Sensitivity test is also known as diagnosis patch test general procedure for this patch test is-place about 0.1-0.3gm of prepared herbal cream can be tested on piece of cotton fiber (2-3cm in size) and apply this to the skin of arms, things or back. And cover the patch. Apply several patch at one time. Out of this several patches some of them should be similar cosmetics of other brand available in market and known not to cause any harm to the skin. Other similar factor act as a control. This patch allow to remaining on the skin for 24-72 hours. If there are no reactions, the same patch may be reapplied to the same place or a fresh patch of the same material may be made and applied. This may be continued till-either a reaction is produced under the one or more patches or – investigator is confirmed that no reaction will occur. It is tested by patch test apply product on one patch of skin, if there is no inflammation or rashes is considered as free from sensitivity [25,34]

Evaluation Parameter :

Test	Parameter	observation
Appearance	colour	slightly yellow
	Odour	No smell
	texture	smooth
pH Test	pH	5.5 – 6.5
Spreadability test	Surface adhesion	Good
Homogeneity	Even distribution of ingredients	Good
Washability	Ease of removal with water	Easily remove
Viscosity	Thickness of cream	Moderately viscous (27150- 26985 cps)
Irritancy test	Any redness, itchiness, or reaction (usually tested on inner arm patch)	No irritation
Stability testing	Changes in appearance, odor, separation at 4°C, RT, 40°C	No change in color, odor, or consistency over 30 days
Microbial growth test	Changes in appearance, odor,	No microbial Growth
	separation at 4°C, RT, 40°C	
Sensitivity Test	Reaction on sensitive skin	Nil

	(under eye, inner elbow)	
Acid value	Free fatty acids (FFA)	2.3 mg KOH/g
Saponification Value	Total fatty acids content	190 mg KOH/g
Bleeding test	Liquid omitting	No omit liquid

Future Perspective :

Ayurveda, recognized as an ancient science of life, boasts a long and rich history, with foundational principles that remain relevant today. The need for the scientific evaluation of Ayurveda has been acknowledged for a significant period. Nevertheless, the core essence of any scientific discipline lies in the continuous pursuit of new knowledge through research, development, and innovative applications. Therefore, it is highly recommended to conduct ongoing studies on the safety, quality, and efficacy of Ayurvedic medicines and practices. A rigorous methodical approach and critical analysis of clinical practices are indispensable for their validation.One such well-known Ayurvedic formulation, Shatdhauta Ghrita (ghee that is washed 100 times), is widely used in traditional medicine. However, its application in modern therapeutic settings has not been sufficiently explored. This study was conducted with the aim of investigating the potential of Shatdhauta Ghrita as a base for topical drug delivery.Looking forward, it is plausible that Shatdhauta Ghrita could serve as an alternative to conventional topical ointments. Moreover, by incorporating herbal drugs or phytoconstituents, it may facilitate the creation of effective herbal formulations. Despite the promising potential, scientific efforts are required to validate its biological activities, ensure its safety, and establish standards.

Furthermore, the benefits of Shatdhauta Ghrita should not remain confined to ancient texts, but should be substantiated through modern scientific inquiry.[35]

CONCLUSION

This moisturizing cream, made from natural ingredients, not only provides moisture but also offers nourishment, healing, and protection from environmental damage. It may be an excellent alternative to conventional creams, especially for individuals seeking natural, gentle, and multifunctional skin care.However, further studies or stability testing would be needed to validate the cream's long-term effectiveness, texture, and shelf life before it can be marketed or used on a larger scale.

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